

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 08 MAR 2006	
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Applicant's or agent's file reference E-3073/05	FOR FURTHER ACTION		See Form PCT/PEA/416
International application No. PCT/IB2005/000447	International filing date <i>(day/month/year)</i> 22.02.2005	Priority date <i>(day/month/year)</i> 27.02.2004	
International Patent Classification (IPC) or national classification and IPC B29C73/16			
Applicant TEK S.R.L. et al.			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p style="margin-left: 20px;">a. <input checked="" type="checkbox"/> <i>sent to the applicant and to the International Bureau</i> a total of 5 sheets, as follows:</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p style="margin-left: 20px;">b. <input type="checkbox"/> <i>(sent to the International Bureau only)</i> a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input checked="" type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand 27.12.2005		Date of completion of this report 07.03.2006	
Name and mailing address of the international preliminary examining authority: <div style="display: flex; align-items: center;"> <div> European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465 </div> </div>		Authorized Officer Peschel, W Telephone No. +49 89 2399-2702	



**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/IB2005/000447

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages

1, 2, 5-12	as originally filed
3, 3d, 4	received on 02.02.2006 with letter of 02.02.2006

Claims, Numbers

4-12	as originally filed
1-3	received on 02.02.2006 with letter of 02.02.2006

Drawings, Sheets

1/3-3/3	as originally filed
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- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-12
	No: Claims	
Inventive step (IS)	Yes: Claims	1-12
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-12
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Re Item V

1. Reference is made to the following documents:

D1: US 2003/056851 A1 (CONTINENTAL) 27 March 2003

D2: DE 201 13 129 U1 (THURNER, HELMUT) 19 December 2002

2. INDEPENDENT CLAIM 1

2.1 The document **D1** is regarded as being the closest prior art to the subject-matter of claim 1, and shows a

- " container 3 (*see in particular figs. 10-12*) for sealing liquid for repairing inflatable articles, in particular, tyres, and comprising a vessel having an opening (*close to neck 37*), and closing means **38** to close said opening, which closing means being a membrane, which membrane, in use of the container, is intended to be perforated by a plunger of the dispenser unit when the container being screwed upon and the compressed-air feed line being activated.

The subject-matter of claim 1 differs from this known container in that

- the closing means being a valve device integrated into the container, wherein
- the valve device having an inlet connectable to a compressed-air feed line (*of the dispenser unit*), and an outlet for dispensing the sealing liquid;
- the valve device comprising at least one control member movable, in response to pressurization of said feed line, from a closed position closing said valve device and wherein said inlet and said outlet are closed from the inside of said container by the control member, to an open position wherein said inlet 44 and said outlet 55 communicate with the inside of said container."

The subject-matter of claim 1 is therefore new (Article 33(2) PCT).

The problem to be solved by the present invention may be regarded as to provide a reliable sealing for the container which also enables the container after partial use of its content to be screwed off and the container opening being closed again.

The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) since even the integration of the valve device of D1 into the container would not result in the subject-matter of claim 1, because the plunger of D1 is not able to seal the container once the membrane being perforated.

Document D2 is even more different from the solution provided by claim 1 of the present invention, since it uses only simple membranes which brake under the pressure of the feed line.

2.2 Claims 2 to 6 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

2.3 **INDEPENDENT CLAIM 7**

Claim 7 refers to a tire repair kit comprising the container of claim 1 and therefore also meets the requirements of the PCT with respect to novelty and inventive step.

2.4 Claims 8 to 12 are dependent on claim 7 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

Re Item VI

1. Line 6 of claim 1 shall read "... housed **in** said opening (17),..." for language reasons.

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* See amended page 30

dispenser unit comprising an inlet conduit and an outlet conduit connected respectively, by respective conduits, to the compressor and the valve of the tyre for repair.

In one known solution, the container is fitted permanently to the dispenser unit, which incorporates a sealing device. The container, in itself open, is therefore undetachable from the dispenser unit.

A major drawback of this solution is that, after use or when the use-by date of the sealing liquid expires, both the container and the dispenser unit must be replaced, thus increasing cost.

In another known solution, the container itself is sealed, e.g. by a sealing membrane, which is split when the container is fitted to the dispenser unit. This means the container must be fitted to the dispenser unit just prior to use, which constitutes an undesired additional operation.

DISCLOSURE OF INVENTION

It is an object of the present invention to provide a container for sealing liquid for repairing inflatable articles, designed to eliminate the aforementioned drawbacks typically associated with known containers.

According to the present invention, there is provided a container for sealing liquid for repairing inflatable articles, in particular, tyres, and comprising a vessel having an opening, and on-off means fitted to said opening; characterized in that said on-off means comprise a valve device having an inlet connectable to a

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US-A1-2003/056851 discloses a container closed by a sealing membrane and connected to a screwed portion of a repair unit. The screwed portion houses a pneumatic cylinder having a plunger movable in response to the pressurization of a channel and a perforator end to tear the sealing membrane and open the container when the channel is pressurized. However, this known container does not provide for a reliable sealing against overpressures which may be caused by overexposure to high temperature because the membrane may easily break.

DISCLOSURE OF INVENTION

It is an object of the present invention to provide a container for sealing liquid for repairing inflatable articles, designed to eliminate the aforementioned drawbacks typically associated with known containers.

According to the present invention, there is provided a container for sealing liquid for repairing inflatable articles, in particular, tyres, according to claim 1.

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compressed-air feed line, and an outlet for dispensing the sealing liquid; said valve device comprising at least one control member movable, in response to pressurization of said feed line, from a closed position closing said valve device and wherein said inlet and said outlet are isolated from the inside of said container, to an open position wherein said inlet and said outlet communicate with the inside of said container.

BRIEF DESCRIPTION OF THE DRAWINGS

A preferred, non-limiting embodiment of the present invention will be described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows a view in perspective of a repair kit comprising a sealing liquid container in accordance with the present invention;

Figure 2 shows a partly disassembled view in perspective of the Figure 1 kit;

Figures 3 and 4 show a rear view and underside view in perspective respectively of the Figure 1 kit partly disassembled;

Figures 5 and 6 show sections, along line V-V in Figure 2, of the container and a dispenser unit of the Figure 2 kit assembled together.

BEST MODE FOR CARRYING OUT THE INVENTION

Number 1 in Figures 1 to 4 indicates as a whole a kit for fast repair of inflatable articles, in particular, tyres.

Kit 1 substantially comprises an electric compressor

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CLAIMS

1) A container (3) for sealing liquid for repairing inflatable articles, in particular, tyres, and comprising
5 a vessel (15) having an opening (17) and closing means (18) to close said opening (17), characterized in that said closing means (18) comprise a valve device integrated in said container (3) and housed into said opening (17), said valve device (18) having an inlet
10 (27c) connectable to a compressed-air feed line (4), and an outlet (29a) for dispensing the sealing liquid; said valve device (18) comprising at least one control member (30) movable, in response to pressurization of said feed line (4), from a closed position closing said valve
15 device (18) and wherein said inlet (27c) and said outlet (29a) are closed from the inside of said container (3) by said control member (30), to an open position wherein said inlet (27c) and said outlet (29a) communicate with the inside of said container (3).

20 2) A container as claimed in Claim 1, characterized in that said valve device (18) comprises elastic means (31) for keeping said control member (30) stably in said closed position in the absence of pressure to said inlet (27c).

25 3) A container as claimed in Claim 2, characterized in that said valve device (18) comprises a body (19) housed in fluidtight manner in said opening (17) of said vessel (15) and having at least one first hole (24) and

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at least one second hole (25) axially spaced apart and communicating with the inside of said container (3); said